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Although there are many reports on the introduction of replicable media in junior college instruction, there is a lack of coordinated research on any particular form of instruction. This is a serious matter, for, without date on whether or not anyone has learned anything from one medium, the introduction of any other medium is necessarily based on criteria of little validity. Some observations, however, may clearly be made: (1) a lecture, even on television, is still only a lecture, not a new instructional method; (2) since programing has a powerful effect on the programer, if not on the student, it appears that teachers should write program; (3) a multi-sensory approach is an attempt to find out what has an effect on which student at what time and suggests avenues of possibly fruitful research. Although comparing effects of various media produces useful correlational studies, most needed is careful design of sequences using media in combinations that allow for maximum effect. There is also a need for more assessment of both long- and short-range instructional outcome. (HH)

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## MULTI-MEDIA INSTRUCTIONAL PROGRAMS

In the junior college as in schools at other levels of education, replicable instructional media have potential for changing the face of instruction. In the past few years, many different instructional forms have been tried, many types of hardware introduced. This issue of *Junior College Research Review* examines a few of the reports on the use of media received and processed by the Clearinghouse.

### REVIEW

The programing boom of the 1950's and 1960's led to the publication of hundreds of printed auto-instructional devices. Many of them were advertised as being "suitable for use in grades 13 and 14." Unfortunately, however, most programs offered for sale did not include data on results obtained in instances where they had been used. Thus the user was required to assume their value — a risky business — or assess it in experiments of his own devising.

In most cases where printed and other forms of programed instruction have been introduced in junior colleges, they have been used to supplement "regular" classroom instruction. However, some courses are being taught by them exclusively. El Camino College has used programs to teach algebra and, more important, has tested their effect (ED 019 053). A series of experiments produced the following result: no significant difference found in student achievement in the course when it was taught by programs whether available teacher time remained the same or was reduced. Accordingly, the college has introduced a uniform testing pattern in its algebra courses and has created large sections in which students learn through the medium of auto-instruction. Experiments with algebra programs at Los Angeles Valley College similarly found no differences in learning achieved by students in "programed" and "live" sections (ED 014 971). In both groups of studies, however, students learning through programs were less inclined to spend time on the texts.

In addition to their being used in mathematics courses, programs have had relatively widespread adoption and testing in the teaching of English Composition. San Diego City College studied the efficacy of a programed text to teach Review English (ED 013 619). Matched classes were generated and comparisons made between students using the program and a control group using a "conventional book." Performance of the experimental group was significantly higher. The General College of the University of Minnesota used post-tests to compare a program designed to teach dictionary use with live instruction (ED 018 212). Students in the programed section made equal or higher scores on all but one of the tests. On the basis of the results, the program was adopted as the medium for instruction in dictionary usage. The General College also studied effects of programed and conventional work-book methods of teaching grammar, sentence structure, punctuation and capitalization (ED 019 072). Pre- and post-tests showed gains being made by all students but there were no significant differences among the groups which could be attributed to differential instructional treatment.

Seemingly contradictory findings have been reported by researchers studying effects of auto-instructional programs. This is not surprising in a field where experimental rigor is difficult to achieve. One problem rests with the designs used. For example, many experiments conducted in junior colleges fail to hold constant the time spent by students in working on the programs or in the comparable control classes. But programs *can* teach; the question is when, how and for whom they can best be used. Audio-tutorial, auto-tutorial and other names are used for instructional approaches which employ workbooks, audio tapes and laboratory equipment in various combinations. The media are viewed, heard and handled by students in individual carrels. Several principles of learning — individual pacing and appropriate practice, for example — are satisfied by the method.

Delta College introduced, tested and expanded an auto-tutorial program in a mathematics unit for nursing students (ED 014 960). The staff developed its own films and audio tapes for use by students in individual learning situations. Golden West College built an audio-tutorial laboratory patterned after the Oakland Community College operation. Initial results were a large decrease in failures and drop

outs and an increase of from one-third to one-half in course content (ED 012 616).

The multi-media approach was also examined in a paper on the changing role of the library (ED 012 185). The author suggested that the first step in using the multi-media approach is in writing specific instructional objectives; the second step is in determining which media best bring students to accomplish the objectives.

Multi-media instructional designs in use in Oakland Community College, Mount San Jacinto College, Oklahoma Christian and other junior colleges were summarized in a report produced in the College of San Mateo (ED 012 182) with costs, values and potential effects on facilities and patterns of organization being considered. The idea of designing their own instructional sequences by combining various forms of media is apparently appealing to many instructors and instructional leaders in the junior college.

Instructional television is a field of study in itself. It has been introduced in many junior colleges with effects similar to those obtained when it is introduced at other levels of education. Values of the medium include its ability to reproduce faithfully the sound and sight of an instructor and the fact that it does not abide shoddy teacher performance (ED 014 961). It can do many things other than reproduce lectures, however, and its uses have not nearly been exploited. There are problems of a different order, too. As was pointed out in a report published by The Fund for the Advancement of Education (ED 012 622), "A medium as potent and versatile as television is not just going to slip into the classroom like a different shade of blackboard." Despite the vast sums of money that have gone into it, "if something happened tomorrow to wipe out all instructional T.V., American schools and colleges would hardly know it was gone" (*Ibid.*, p. 43). The need now is for research on difficulties associated with introducing the medium, for example, on television's effects on institutional organization and internal lines of influence.

Other reports processed by the Clearinghouse consider uses and effects of miscellaneous types of instructional media. A study produced at Stevens College reviewed the use of amplified telephone communication in two inter-institutional courses (ED 012 621). Virgil Sessions considered the use of video tape in speech classes at Orange Coast College (ED 016 454). Sixteen millimeter films and 8mm film cartridges were used in chemistry classes at El Camino College (ED 015 719) and their relative merits were discussed. Junior colleges are introducing those and other forms and are writing up results.

Although conference reports in the field of junior college education seldom include results of research on learning, some papers stress particular needs pertinent to introducing multi-media instruction. Included among papers delivered at a conference at Lee College was a call by B. Lamar Johnson for all programs to be evaluated in terms of their stated objectives (ED 018 208). Papers printed in the report of a conference sponsored by the UCLA Junior College Leadership Program described several multi-media programs in operation in junior colleges around the country (ED 013 090) and made similar cries for evaluation. The community college presidents' institute in Michigan produced papers on audio-tutorial, gaming, new developments in programed learning and instructional innovation in general (ED 014 299). It is the *response* produced by the system that is important, not the system itself. The meaning of that statement is often overlooked by program designers but it was brought out in a report of a workshop on Iowa Community Junior Colleges (ED 014 300). Other matters discussed in detail in that report include the use of a core program to provide a common experience for all students, the employment of a consultant in planning instruction and the use of electronic data processing for routine tasks. Conference papers are valuable as exercises in information dissemination but they substantiate the contention that research on effects of junior college programs is rarely reported.

## SUMMARY

The Clearinghouse collects many reports of the introduction of replicable media in junior college instruction. The lack of a coordinated research thrust on any form of instruction is evident. That lack has serious implications, for, without data on whether or not anyone learned anything from the different media, the introduction of one or another instructional form must be based on other, less valid, criteria. Many observations may clearly be made, particularly: a lecture delivered on television is still basically a lecture, not a new instructional form; programing has a powerful effect on the programer, regardless of the effect it has on the student — a fact which suggests that teachers should write programs; a multi-sensory approach is an attempt to get at the question of what is effectual for which student at what time and, as such, may lead to some fruitful research on learning. Comparing effects of various media produces correlational studies, but what is particularly needed in junior college instruction is careful design of sequences using media in combinations which allow for maximum effect. In addition, more assessment of instructional outcomes, both long and short range, is essential.

*Arthur M. Cohen*

**ED 012 182**
*Systems Approach to Learning*, by Jacob H. Wiens. College of San Mateo, California. 1966.29 pp.

**ED 012 185**
*The Changing Role of the Library on the Junior College Campus — A Case Study at Mt. San Jacinto College.* Seminar Paper, by C. Loran Lee. University of California, Los Angeles, School of Education. 1966. 49 pp.

**ED 012 616**
*Toward Innovation (The Golden West College Story).* Paper presented at the Invitational National Seminar on the Experimental Junior College, Palo Alto, California, February 23-26, 1967, by R. Dudley Boyce. Golden West College, Huntington Beach, California. 1967. 20 pp.

**ED 012 621**
*Two Inter-Institutional Programs Utilizing Amplified Telephone Communication, Final Report On*, by Seymour A. Smith. Stephens College, Columbia, Missouri. 1966. 26 pp.

**ED 012 622**
*Learning by Television*, by Judith Murphy and Ronald Gross. Fund for the Advancement of Education, New York. 1966. 97 pp.

**ED 013 090**
*Systems Approaches to Curriculum and Instruction in the Open-Door College* (Report of a Conference Sponsored by the University of California, Los Angeles, the American Association of Junior Colleges, and the Accrediting Commission for Junior Colleges of the Western Association of Schools and Colleges, July 1966), by Byron Lamar Johnson, Editor. University of California, Los Angeles, Junior College Leadership Program, Occasional Report No. 9. 1967. 73 pp.

**ED 013 619**
*English A — An Evaluation of Programmed Instruction*, by Robert S. Hamilton and Otto A. Heinkel. San Diego City College, California. 1967. 20 pp.

**ED 014 299**
*Administration and Innovation.* Papers from the Community College Presidents' Institute (6th, 1966), by John Weber, Editor. Midwest Community College Leadership Program, Ann Arbor, Michigan. 1966. 119 pp.

**ED 014 300**
"The Educational Program — Coordination and Development," *Iowa Community Junior College Workshop Report* (University of Iowa, Iowa City, June 12-16, 1967). Iowa State Department of Public Instruction, Des Moines. 1967. 55 pp.

**ED 014 960**
*Auto-Tutorial and Mobile-Tutorial Laboratory Techniques in Nursing Education*, by Crystal M. Lange. Delta College, University Center, Michigan. 1966. 11 pp.

**ED 014 961**
*Television and College Instruction*, by Los Angeles City Schools, California. 1965. 39 pp.

**ED 014 971**
*A Pilot Study Evaluating the Use of Programmed Learning in the Teaching of Exponents to an Intermediate Algebra Class at Los Angeles Valley College* (Spring, 1967), by Frederick A. Machetanz, et al. Los Angeles Valley College, Van Nuys, California. 1967. 8 pp.

**ED 015 719**
*A Project to Improve Learning in Chemistry at El Camino College by Introducing Chem Study Films in the Eight Millimeter Cartridge Form for Out-of-Class Use by Students*, by Leo E. Kallan and William T. Mooney. El Camino College, California. 1965. 30 pp.

**ED 016 454**
*Video Tape — The Greatest Innovation for Junior College Speech Courses Since Chalk*, by Virgil D. Sessions. University of California, Los Angeles, School of Education. 1967. 29 pp.

**ED 018 208**
*Creating a Climate for Innovation.* Report of a Conference for Community College and Public School Administrators, Supervisors, Personnel, and Teachers (Lee College, Baytown, Texas, October 30-31, 1967), by Ralph O. Teter and Thomas Pate, Jr.,Gulf Schools Supplementary Education Center, Pearland, Texas. 1967. 51 pp.

**ED 018 212**
*A Study of the Effectiveness of a Programed Learning Method in Teaching the Use of "Webster's Seventh New Collegiate Dictionary,"* by William A. Stockdale. The General College, University of Minnesota, Minneapolis. 1967. 5 pp.

**ED 019 053**
*A Report on Experimentation in the Teaching of the First Course in Algebra at El Camino College*, by Henry Mansfield, Jr. El Camino College, California. 1968. 23 pp.

**ED 019 072**
*Comparing an Experimental and a Conventional Method of Teaching Linguistic Skills*, by David L. Giese and William A. Stockdale. The General College, University of Minnesota, Minneapolis. 1966. 11 pp.

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